

Space Transportation Association Lunch  
Speech by Douglas R. Cooke  
December 12, 2008

It's December, and it's traditional during this month to look back on the year that is ending—to examine accomplishments, to understand challenges, and to make resolutions for the year ahead. This year in particular has been a special one for the country with a new Administration being elected, for NASA with its 50th anniversary, great progress being made in our Exploration programs, and for me personally.

Looking back on 2008 on a personal level, I'm celebrating 35 years of working for NASA this year. That is not remarkable by itself. It might just mean I was able to survive that long. However, over these years I have been fortunate to have had many unique opportunities and responsibilities at critical times in the human space flight programs. I am proud of the accomplishments of the programs on which I have worked, from Space Shuttle to International Space Station to the current programs in Exploration Systems.

When I started my career there is one thing I did not anticipate would be so important to me at this point 35 years later. That is the value I place in the friendships of people I have worked with, including many of you. For many years while pushing for exploration to become a real program, I thought maybe that is all I would have to look back upon fondly of my years in exploration when I reached the end of my career. I have worked with a lot of incredibly talented people.

I grew up in Houston and so I had a connection to human space flight, from early on. I remember watching the first American astronauts on black and white TV in the school cafeteria. I was excited when NASA came to Houston and the NASA logo was to be seen on office buildings scattered around town. I remember when the "Manned Spacecraft Center" was built and opened in 1963 on the banks of Clear Lake. I started working for NASA in 1973, the same year that the center was renamed the Lyndon B. Johnson Space Center. I was hired by Max Faget, co-holder of patents for Mercury, Gemini, Apollo and Space Shuttle. He also designed the concept of the launch escape system that was used in Mercury and Apollo and is used in the Russian Soyuz program to this day and will fly again on Orion. He was the original leader of the JSC engineering directorate. He is one of my heroes and I cannot even put into words how much I learned from him. I was lucky enough to meet Max my first year in college. I competed against him and others in a small fleet of racing sailboats in Clear Lake and Galveston Bay all through college. I was excited when I received an offer from NASA. It is where I wanted to work. I might have gone into sailboat design and racing, and later did help design America's Cup boats and sailed at that level of the sport. But for my primary path I chose what meant the most to me, to contribute to human space exploration.

Now I have the opportunity to lead NASA's Exploration programs as Associate Administrator and I hope to carry on Max Faget's legacy along with the legacies of the other fathers of Apollo and Space Shuttle, while humbled by their achievements. I am honored to have this position, leading the workforce that is moving the country's human space flight program forward into a new generation of exploring space. I take this role very seriously. I am aware of the great responsibility I have to help make the future of human space flight happen, and to ensure that it moves forward in the tradition of

technical excellence established by the other human space flight programs on which I have had the opportunity to work over the years. But what we are doing is not about me or any one of us. It is not about personal or company agendas. It is bigger than that. It is an order of magnitude beyond Lewis and Clark. It is about exploration to learn of the unknown, exploration of space. It is about NASA's mission to explore and bringing the benefits back to the people here on Earth.

So back to Earth for now;

The Exploration programs have achieved a great deal this year. Orion underwent its System Baseline Review, which helped set it on the path to PDR. It also just accomplished a successful test of components of the launch abort system.

NASA successfully completed the Ares I rocket's preliminary design review. The preliminary design review is the first such milestone in more than 35 years for a U.S. rocket that will carry astronauts into space. I attended the review and despite what is said in the blogosphere and sensational press, it was very professionally done. If there were a number of yellow and orange stop light evaluations, it's because it focused on the technical issues. A number of us poked hard with tough questions. The team was exceptionally well informed and had valid plans to address them.

NASA also successfully completed a series of tests on the J-2X motor power pac at Stennis. The J-2X project also just held its CDR. Ares I tested its drogue parachute and successfully demonstrated that the rapid descent of Ares' spent first-stage motor could be slowed similar to the way the space shuttle's solid rocket boosters are recovered now.

Hardware for the Ares I-X test rocket began arriving at Kennedy Space Center this fall, including the forward skirt and the upper stage simulator sent from Glenn Research Center. They are beginning to stack these this week.

For Ares V, we released a draft Phase I Request for Proposals on November 24 and had an Ares V industry day in Huntsville on December 3 to discuss industry comments on the draft RFP. The final Phase I RFP is on track for release on December 19. The Altair Lunar Lander draft RFP will be released on December 16 and will have its industry day on December 18. The final RFP will be released in January.

We continued to lay the groundwork for NASA's return to the moon. The Lunar Reconnaissance Orbiter, which will characterize the lunar environment, was named one of Time Magazine's top inventions of the year. LRO is in thermal vac testing, and will come out this month. The imagery, topography and resource maps from LRO will far surpass the data we have from the past.

We completed the Lunar Capabilities Concept Review in June to help determine the systems needed to return humans to the moon and establish a lunar outpost. This was our first programmatic milestone for return to the moon. The next step is to take the information gained in the review and develop it into requirements for the lunar program.

As we move forward to refine our lunar exploration plans, we are working to leverage robust international, scientific, commercial, and other government agency partnerships to ensure our mission success. As part of this effort, we've actively engaged with the 13 other space agencies in the International Space Exploration Coordination Group as part of the Global Exploration Strategy. NASA is committed to being a leader

among strong and engaged partners and will continue our efforts to cement cooperative partnerships.

NASA also held several analog tests to learn more about living and working on the moon. Successful tests in Hawaii, Arizona and Washington ran prototype lunar rovers and demonstrated capabilities for astronaut transport, habitat construction and extraction of oxygen from soil. Representatives from Canada, Japan, and Germany are also participating with us in our analog activities.

A concept known as the small-pressurized rover was matured this year and demonstrated in field tests. This concept includes suit ports, which allows quick and easy deployment of astronauts in space suits onto the surface. This concept combines surface mobility and EVA in the most efficient manner allowing for more productive crews.

On COTS, we signed a Space Act Agreement with Orbital Sciences Corporation this year, and Orbital and Space-X are meeting their milestones. Both are working towards a cargo transportation capability in 2010.

For the country, 2008 marked the election of a new Presidential Administration. The new Administration together with Congress will determine NASA and Exploration's direction in 2009. We do not yet know what that direction will be, but of course we will adapt to changes in direction we receive from them. Given our current direction, I would like to tell you what my goals are for Exploration for next year. I guess this is my own form of New Year's resolutions.

My primary resolution is to proceed with the milestone events planned for 2009, if they are blessed by the new Administration, and accomplish these milestones according to the main NASA values of safety, teamwork, integrity, and mission success. This may sound like just a slogan, but it is not. I take all of these aspects of NASA's values to heart. When I was working as the NASA technical Advisor for the CAIB after the Columbia accident, I thought long and hard about the Board's finding that NASA's safety culture was broken. The only way to fix it is to instill the above values in everything we do. Safety and mission success are achieved through working as a team, through working with integrity, and perhaps most importantly—through establishing an environment where people are not afraid to speak out when they disagree. I want my major meetings and reviews to be run in a way that people can feel comfortable expressing dissenting views. A decision should be made after these views are heard, and then if there is still disagreement, there is a path of appeal up to the Administrator.

At the same time, I want to proceed forward with our program. We need to move towards decision more efficiently. We need to make timely decisions to enable moving from one milestone to the next. We need to keep safety in mind while working as a team to develop solutions to some of our technical challenges, discuss those proposed solutions in decisional meetings, make a determination, and move forward. I am going to look at our processes to see what can be streamlined to move issues towards decision more quickly. I do not mind if there are still alternate views that exist by the time something makes it to a decisional meeting. In fact, I hope there are different views that can be heard and discussed.

We're planning several important milestones for Exploration next year. The Lunar Reconnaissance Orbiter/Lunar Crater Observation and Sensing Satellite missions will launch in the spring of 2009. LRO and LCROSS are our first steps in our return to the Moon. LRO will produce the data we need to better understand the lunar surface and

assist us in determining the best location for human lunar exploration. The LCROSS mission will impact a permanently shadowed crater at one of the lunar poles, and may well answer the question whether water ice exists on the Moon. Both of these robotic missions have attracted the positive attention of the public. More than 1.5 million people are sending their names to the Moon on LRO and tens of thousands of people have attended family events at Goddard and Ames to learn more about these exciting missions.

The Ares I-X test flight is currently planned for July 2009. Bill Gerstenmaier is helping greatly in identifying options regarding pad availability given Shuttle launch-on-need and availability of the Mobile Launch Platform to enable flight of Ares I-X in this timeframe.

For Orion, the project is pursuing the initial flight test of the Orion Launch Abort System, or LAS, known as Pad Abort-1. The test will demonstrate the LAS performance and is planned for late spring 2009.

Orion's Preliminary Design Review is currently scheduled for August 2009. There are some issues that I want to have resolved with Orion prior to going to PDR, including issues with mass, a determination of whether to go with 28 volt or 120 volt power and design of the power distribution system, avionics issues, and a final decision on the heat shield material. All of these are being worked towards optimal solutions and I have confidence in Orion's design as we move forward.

There are those who question our transportation architecture path, those who advocate flying Orion on an EELV rather than on the Ares I and those who advocate continuing the Space Shuttle instead of any new architecture at all. I wrote about this recently in Space News. NASA has studied different launch vehicle options in great depth for many years and many times. Most recently studies have determined that the Shuttle-derived Ares I and V designs are optimal as compared to EELVs from a safety, reliability, and cost standpoint. NASA chose Ares I because it could launch the 23.3-metric-ton Orion crew module, service module and its launch abort system on a trajectory to reach the International Space Station in addition to enabling Orion to travel beyond Low Earth Orbit to the Moon, Mars and beyond. Ares is human-rated without needing the extensive modifications other vehicles would require to transport people. Its hardware can be recovered and inspected to correct problems. Its design, development, test and evaluation costs are less than those for EELVs according to our studies.

We need a Shuttle replacement vehicle to move beyond LEO for the first time in 36 years. Apollo 17 launched December 7, 1972. We are making progress well down this path for an architecture that can take us beyond LEO with the bipartisan support of Congress, and I believe that we need to maintain this momentum.

So this is where we are at the end of 2008 and where I plan to go in 2009. Next year will be a busy year for NASA's Exploration programs and certainly for our country as a whole. It's exciting to have NASA's Exploration program participating in the change that America is experiencing. We are changing our human space flight transportation architecture to propel us beyond Low Earth Orbit. We are determining the requirements to establish an outpost on the Moon. We are studying how the experience we gain on the Moon will enable our ability to safely send astronauts to Mars and other destinations. We are building this next generation of hardware and beginning test flights

of it. We're implementing new tools to make it easier for the public to share the experience with us, and to take part in this exciting new phase of Exploration.

I hope to come back and talk to this group from time to time and at the end of 2009 to see how well NASA has done with my New Year's resolutions. And I will make new ones for 2010, which will hopefully include the first flight demonstration of COTS cargo transportation capability and moving to the formal development phase for Orion. We are going to do this in an environment of free and open communication and with our safety culture in mind. I look forward to seeing you back here next time.